REMARKS

Claims 1, 12, 22, 32, 37, 44, 46, 47 and 48 have been amended as set forth above. Support for these amendments is found on at least: page 12, lines 10-13; page 22, lines 12-19; page 23, lines 8-11; page 24, line 28 through page 25, line 23 and the description and illustration of Figures 3, 4, 7a-7b, 8a-8b, 9a-9f, 10a-10b. Claims 1-48 remain pending. In response to the Appeal Brief filed on July 30, 2002, the Office withdrew the finality of the final Office Action and rejected the claims as follows:

(a) Claims 44, 47 and 48 are rejected under 35 U.S.C. 112;

(b) Claims 32-35 and 37-40 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturdevant '946, in view of Redfield '861, Hall et al. '326 and Amako et al. '214;

(c) Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang '045, in view of Ikeda et al. EP 0087281 and Sutherland et al. WO 98/04650;

(d) Claims 1-11, 22-31 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang '045, in view of Ikeda et al. EP 0087281 and Sutherland et al. WO 98/04650, further in view of Margerum et al. '568;

(e) Claims 1-43 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang '045, in view of Ikeda et al. EP 0087281 and Sutherland, et al. WO 98/04650, further in view of Margerum et al. '568 and either Eguchi et al. JP 03-188479 or Wreede et al. '118;

(f) Claims 22, 32-40 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturdevant '946, in view of Redfield '861, Margerum et al. 218 and Sutherland et al;

(g) Claims 1-11, 22-43 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturdevant '946, in view of Redfield '861, Margerum et al. 218 and Sutherland et al. WO 98/04650, further in view of Margerum et al. '568; and

(h) Claims 1-43 and 46 are rejected 35 U.S.C. 103(a) as being unpatentable over Sturdevant '946, in view of Redfield '861, Margerum et al. 218 and Sutherland et al. WO 98/04650, further in view of Margerum et al. '568 and either Eguchi et al. JP 03-188479 or Wreede et al. '118.

The undersigned representative respectfully traverses these rejections and responds to each rejection in turn as follows.

(a) Claims 44, (45), 47 and 48 are rejected under 35 U.S.C. 112

The Office has rejected claims 44, 45, 47 and 48 under 35 U.S.C. § 112, "because the specification, while being enabling for holograms having variable diffraction efficiency, does not reasonably provide enablement for other holograms being turned on and off." The specification specifically describes and illustrates the ability to turn ON and OFF a hologram under electrical control. Referring to page 23, lines 4-20, the specification states,

> Since the method of reproduction in the embodiments of the present invention is contact reproduction, the master and the blank are in close physical and optical proximity. If the master hologram is not capable of being switched OFF, any exposure radiation through the master hologram, will necessarily cause a pattern to be created within the blank. But, in the case where the master hologram is an H-PDLC master, **the holographic nature of the master may actually be turned OFF and ON under electrical control**, such that in the OFF state, the H-PDLC master resembles a piece of transparent glass as shown in **FIG. 9a**. In **FIG. 9a**, the H-PDLC master reflection hologram **35** is turned OFF, such that the liquid crystals do not orient so as to form a holographic grating within the H-PDLC master. Consequently, a pre-recording beam **5** passes through the PDLC blank **37** and the H-PDLC master **35** without being reflected back through the PDLC blank and forming an interference pattern therein. In the case of a transmission H-PDLC master, as shown in **FIG. 9d** the order of the PDLC blank **37** and the H-PDLC master **35** is reversed, such that the pre-recording beam **5** first passes through the master **35** which is OFF and then passes through the blank **37**, without forming any interference pattern with in the blank **37**. Pre-recording beam **5** may be the same beam as recording incident beam **33** or it may be an auxiliary beam.

(emphasis added); See also page 24, line 28 through page 25, line 23. Further, one skilled in the art recognizes that basic knowledge in the art and a cursory review of at least Figures 3, 4, 5, 9a – 9e, and 10a and 10b enables OFF and ON electrical control of

the hologram, i.e., the diffraction characteristics defining a hologram, through application of a voltage or removal thereof via the electrodes described with reference to Figure 5. See Pg. 12, lines 10-15 (Finally, in order to allow control of the liquid crystal orientation within the PDLC material, both during and after formation of the hologram, so as to ascertain desired Bragg grating angles, electrodes **55** are provided in electrical contact with the ITO glass slides **52a** and **52b**.)

The undersigned representative respectfully submits that the claims are enabled by the specification for turning the hologram ON and OFF and respectfully requests removal of the rejection. Further, the undersigned representative has amended the claims as suggested by the Examiner.

(b) Claims 32-35 and 37-40 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturdevant '946, in view of Redfield '861, Hall et al. '326 and Amako et al. '214

Independent claims 32 and 46 have been amended as set forth above. The undersigned representative hereby incorporates by reference the arguments from Sections 8A and 8B of the Applicant's Appeal Brief filed on July 30, 2002. For the record, the undersigned hereby replaces the two instance of the phrase "non-holographic image" found on page 8 of the Appeal Brief with the phrase "static hologram" so as to be commensurate with Figure D of Appendix A. Whether or not Amako et al. forms a "non-holographic image" or a "static hologram" by contact printing is irrelevant to this argument as neither exhibits the electrically controlled variable diffraction efficiency as set forth in independent claims 32 and 46 by amendment. Consequently neither Sturdevant, Redfield, Hall or Amako or any combination thereof teach or suggest a

method for contact printing a master hologram forming a replica thereof, wherein the master hologram(s) has an electrically controllable variable diffraction efficiency as set forth in independent claims 32 and 46.

(c) Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang '045, in view of Ikeda et al. EP 0087281 and Sutherland et al. WO 98/04650

By virtue of the amendment to claim 22, the variable diffraction efficiency of the hologram is electrically controllable. The undersigned representative's arguments with respect to the rejection of claim 22 using the combination of Ikeda et al. and Sutherland et al. are hereby incorporated from at least Section 8C of the Applicant's Appeal Brief filed on July 30, 2002. Chang is cited for it's teaching of a static hologram that has different diffraction efficiencies. Neither Change, Ikeda et al. or Sutherland et al. teach or suggest a method for contact printing a master hologram forming a replica thereof, wherein the master hologram has an electrically controllable variable diffraction efficiency as set forth in claim 22.

(d) Claims 1-11, 22-31 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang '045, in view of Ikeda et al. EP 0087281 and Sutherland et al. WO 98/04650, further in view of Margerum et al. '568

By virtue of the amendments to claims 1, 22 and 46, the variable diffraction efficiencies of replica(s) and the master hologram(s) is electrically controllable. The undersigned representative's arguments with respect to the rejection of claims 1 and 22 using the combination of Ikeda et al. and Sutherland et al. are hereby incorporated from at least Section 8C of the Applicant's Appeal Brief filed on July 30, 2002. Chang is cited

for its alleged teaching of a static hologram that has different diffraction efficiencies. Margerum '568 is cited for its alleged teaching of contact exposure through a grating mask to form diffraction gratings in PDLC recording materials. The undersigned representative's arguments with respect to the rejection of claims 1 and 22 using a combination of references that include Margerum '568 are hereby incorporated from the Applicant's responses filed October 22, 2001 and November 5, 2001. Neither Chang, Margerum '568, Ikeda et al. or Sutherland et al. teach or suggest a system or method which include a hologram(s) used as a master hologram(s) for contact printing a replica(s) thereof, wherein the replica(s) and hologram(s) has an electrically controllable variable diffraction efficiency as set forth in independent claims 1, 22 and 46.

(e) Claims 1-43 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang '045, in view of Ikeda et al. EP 0087281 and Sutherland, et al. WO 98/04650, further in view of Margerum et al. '568 and either Eguchi et al. JP 03-188479 or Wreede et al. '118

By virtue of the amendments to claims 1, 12, 22, 32 and 46, the variable diffraction efficiencies of replica(s) and the master hologram(s) is electrically controllable. The undersigned representative's arguments with respect to the rejection of claims 1, 12 and 22 using the combination of Eguchi et al. JP 03-188479, Wreede et al. '118, Margerum '568, Ikeda et al. and Sutherland et al. are hereby incorporated from at least Section 8C of the Applicant's Appeal Brief filed on July 30, 2002 and apply to the Examiner's rejection of claims 32 and 46. Chang is further cited for its alleged teaching of a static hologram that has different diffraction efficiencies. Neither Eguchi et al. JP 03-188479, Wreede et al. '118, Margerum '568, Ikeda et al., Sutherland et al. or any combination thereof teach or suggest a system or method which include a hologram(s) used as a master hologram(s) for contact printing a replica(s) thereof, wherein the

replica(s) and hologram(s) has an electrically controllable variable diffraction efficiency as set forth in independent claims 1, 12, 22, 32 and 46.

(f) Claims 22, 32-40 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturdevant '946, in view of Redfield '861, Margerum et al. 218 and Sutherland et al.

By virtue of the amendments to claims 22, 32 and 46, the variable diffraction efficiencies of replica(s) and the master hologram(s) is electrically controllable. The undersigned representative's arguments with respect to the rejection of claims 22, 32 and 46 using some combination of Sturdevant, Redfield and Sutherland et al. are hereby incorporated from Sections 8A and 8B of the Applicant's Appeal Brief filed on July 30, 2002. Margerum '218 is cited for its alleged teaching of the use of a precure to overcome the induction period in photopolymerizable materials. Neither Sturdevant, Redfield, Sutherland, Margerum '218 or any combination thereof teach or suggest a system or method which include a hologram(s) used as a master hologram(s) for contact printing a replica(s) thereof, wherein the replica(s) and hologram(s) has an electrically controllable variable diffraction efficiency as set forth in independent claims 22, 32 and 46.

(g) Claims 1-11, 22-43 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturdevant '946, in view of Redfield '861, Margerum et al. 218 and Sutherland et al. WO 98/04650, further in view of Margerum et al. '568

By virtue of the amendments to claims 1, 22, 32 and 46, the variable diffraction efficiencies of replica(s) and the master hologram(s) is electrically controllable. The undersigned representative's arguments with respect to the rejection of claims 1, 22, 32 and 46 using some combination of Sturdevant, Redfield, Margerum '568 and Sutherland et al. are hereby incorporated from Sections 8A and 8B of the Applicant's Appeal Brief

filed on July 30, 2002. Margerum '218 is cited for its alleged teaching of the use of a precure to overcome the induction period in photopolymerizable materials. Neither Sturdevant, Redfield, Sutherland, Margerum '218, Margerum '568 or any combination thereof teach or suggest a system or method which include a hologram(s) used as a master hologram(s) for contact printing a replica(s) thereof, wherein the replica(s) and hologram(s) has an electrically controllable variable diffraction efficiency as set forth in independent claims 1, 22, 32 and 46.

(h) Claims 1-43 and 46 are rejected 35 U.S.C. 103(a) as being unpatentable over Sturdevant '946, in view of Redfield '861, Margerum et al. 218 and Sutherland et al. WO 98/04650, further in view of Margerum et al. '568 and either Eguchi et al. JP 03-188479 or Wreede et al. '118

By virtue of the amendments to claims 1, 12, 22, 32 and 46, the variable diffraction efficiencies of replica(s) and the master hologram(s) is electrically controllable. The undersigned representative's arguments with respect to the rejection of claims 1, 12, 22, 32 and 46 using some combination of Sturdevant, Redfield, Margerum '568, Eguchi et al. JP 03-188479, Wreede et al. '118 and Sutherland et al. are hereby incorporated from Sections 8A, 8B and 8C of the Applicant's Appeal Brief filed on July 30, 2002. Margerum '218 is cited for its alleged teaching of the use of a precure to overcome the induction period in photopolymerizable materials. Neither Sturdevant, Redfield, Sutherland, Margerum '218, Margerum '568, Eguchi et al. JP 03-188479, Wreede et al. '118 or any combination thereof teach or suggest a system or method which include a hologram(s) used as a master hologram(s) for contact printing a replica(s) thereof, wherein the replica(s) and hologram(s) has an electrically controllable variable diffraction efficiency as set forth in independent claims 1, 12, 22, 32 and 46.

CONCLUSION

In view of the amendments to the independent claims and the remarks stated above, the undersigned representative respectfully requests that the rejections of claims 1-48 be withdrawn. A notice of allowance to this effect is earnestly solicited. Should the Examiner require further information and/or feel that contacting the undersigned will expedite prosecution, the Examiner is invited to do so at the number provided below.

Respectfully submitted,

Date: 2/19/03

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